Borers, Bark Beetles and Sap Suckers Infest Spring Creek Trees

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Agents of Mortality and Injury

Since we did not directly view or catch any of the pest specimens, we have to use evidence that they leave behind, such as tree species attacked, bore hole size, bore hole shape, as well as boring dust color and coarseness. With all of this information we can make a fairly sound determination of which pests are damaging the trees. Trees most affected by the attacks are the native Utah juniper (*Juniperus osteosperma*) as well as various landscape trees such as poplars (*Populus spp.,* i.e. aspens, cottonwoods, etc.), spruces (*Picea spp.*), and Austrian pines (*Pinus nigra*). Landscape trees being attacked were mostly confined to those that are not being effectively irrigated. Those that are being effectively irrigated are filling the holes with sap (a natural defense mechanism) or not being attacked at all. Trees that are attacked will have dead or dying leaves as well as bore holes in branches or the trunks with pitch tubes, leaking sap, and saw dust in the bark or on the ground. Many of the bore holes are generally about the size of a pencil diameter and oval in shape. When these are found in the Juniper trees, they are accompanied by boring galleries that are about ½-inch wide underneath the bark, usually lengthwise along the branch or stem. This damage is likely caused by one of the many species of round-headed and/or Longhorned borers in the *Cerambycidae* family that attack stressed juniper trees. These pencil sized holes were also found in the aspens and cottonwoods where a large amount of fresh sawdust or frass was found at the base of each tree attacked as well as dark fluids leaking from locations of bore holes. The cause of this damage likely from the poplar borer (*Saperda calcarata*) and bronze poplar borer (*Agrilus liragus*). Smaller holes also exist that are about the size of a BB the Austrian pines which are likely from a Sapsucker (*Sphyrapicus spp.*), which is related to the woodpecker and consumes the sap as a food source. The sapsucker damage found is considered to be incidental and does not pose an eminent threat in this case because the trees are effectively healing and growing vigorously. Often the area of the sapsucker damage becomes infested by the pitch mass borer *(Synanthedon pini)* which creates a large mass of pitch at the larval feeding site. The smaller holes were also found in the Utah juniper trees, which are likely cedar bark beetles (*Phloeosinus spp.*) that leave sawdust in the bark furrows below the holes. They are also accompanied by a splaying array of many feeding galleries underneath the bark that are only as wide as a BB each.

Photo 1. Roundheaded or longhorned borer holes (left) and galleries underneath bark (right) found in native Utah Juniper. Submitted by Ryan S. Shane

Photo 2. Cedar bark beetle holes (left) and galleries located underneath bark (right) found in native Utah Juniper. Submitted by Ryan S. Shane

Photo 3. Poplar borer holes found in an Aspen tree with leaking sap (left) and borer hole with frass and sawdust at base of tree (right). Submitted by Ryan S. Shane

Photo 3. Yellowing leaves of a dying native Utah Juniper after being attacked by cedar bark beetles and roundheaded or Long-horned borers. Submitted by Ryan S. Shane

Lifecycle of Bark Beetles and Borers

In general, adult borers and bark beetles seek trees that are stressed due to disease, injury, or drought. Once the insects have targeted a tree, they lay eggs in small cracks in the bark or just under the bark of the trees during the warm months of the year (June through September). Eggs usually only take a week or two to hatch and then the larvae chew their way underneath the bark in the woody tissues of the tree responsible for carrying nutrients, energy and water for plant growth. While consuming the energy rich material, the insects generally leave meandering pathways underneath the bark and through the sapwood, leaving them packed with sawdust or frass. After one to two years of the wood chewing activities inside the tree, the insects are mature enough to emerge by chewing their way out through the bark, leaving bore holes. Once emerged, they feed on tender portions of bark, pollen, leaves. These activities do not generally injure the tree like the wood chewing. Most of the adult portion of the insect's life is spent flying from tree to tree, mating, and laying eggs.

Attack Treatment and Prevention

Since borers and bark beetles seek unhealthy trees, the first line of defense is using good cultural practices to keep trees healthy and vigorous. Appropriate response to trees that are already attacked can reduce the likelihood of spread to other nearby trees. Below are a variety of tactics to deal with bark beetles and borers.

Regular and Adequate Watering: Moisture keeps trees growing vigorously, which allows them to deter insects and to heal wounds when injured. Mature trees can use from 25 to 50 gallons of water per day. Watering with more water, less frequently in the clayey soils found in our area is better for trees than frequent and shallow watering used for watering lawns. During winter, fall, and early spring warmer temperatures and dry soil conditions will cause drought damage to parts of the root system. To avoid this damage, watering every two to three weeks, during midday, is recommended when

temperatures are greater than 40°F. Using mulch will help increase effective soil moisture conservation. Excessive watering, especially of native trees like Utah juniper or other adapted dryland species can decrease tree health.

Monitor Trees for Attacks: Take time to walk around your trees regularly and look for signs of attack, including bore holes, sap leakage, saw dust, dying limbs and leaves. Treat trees that are being attacked appropriately based on severity of attacks and species of insect (see below).

Tree Removal: If a tree is severely attacked or has active wood borers in it, it will not have enough energy and water to fight off of the insects and heal the damaged caused by the attack. The tree will generally die and must be removed prior to insect re-emergence to break the insect's lifecycle. Trees with only sparse attacks may be saved using appropriate pruning methods (read below) Storing or disposing of the wood correctly will ensure insects are not spread to health trees (read below).

Pruning: For trees that have attacks confined to one or a few branches, pruning the attacked branches is recommended. Pruning should be kept at well less than 20-25% of the tree's leaf area in a single year because the tree is already stressed from the attacks, and pruning is an additional stress for the tree. Pruning should also take place in the winter or after the first freeze when possible. Pruning the native Utah junipers is not advised for wildfire fuel reduction because juniper pocket rot disease can be started in the wounds. Thinning by removing entire trees for fuels reduction is advised over pruning. Pruning on the pines can lead to an increase in sapsucker and pitch pitch mass borer damage. Storing or disposing of the pruned wood correctly will ensure insects are not spread to adjacent trees (read below).

Chemical Control/Prevention: Chemical control and prevention is generally limited to those trees that have minor attacks and appear to be still living or highly valued healthy trees in the area of other attacks. Insecticides available generally affect the insect larval stage only during the week(s) that they hatch from the egg until it they bore through the bark into the wood. This is likely in June and July in Elko County. Spray-on chemical treatments after the insects have bored into the tree will be ineffective. If you know your trees are infested with bark beetles or borers, you are encouraged to contact a local or regional certified arborist company to help you determine which insecticide will work best based on the species of tree, species of insect and severity of the infestation. In addition to spray-on insecticides as well as systemic, like Merit (imidicloprid), that can be injected directly into the trunk or applied as a drench to the soil for root uptake in attempt to rid the tree of borers. These insecticides have only shown marginal success, and that is why borer infested trees are recommended for removal if the main trunk is infested. Some spray-on insecticides like Carbaryl are profilactic, so they help deter infestations, not cure already infested trees. On pine, spruce and juniper trees that are not heavily infested, apply an insecticide with carbaryl, chlorpyrifos or permethrin according to label directions. Multiple treatments spaced throughout the growing season may be needed. Insecticides currently labeled for borer control on poplars include certain formulations of acephate, diazinon, dimethoate, and permethrin. These insecticides are sold under many trade names and some may be only available to licensed applicators for treating trees for these insects. *Pesticide Precautions: Pesticides used improperly can be injurious to humans, animals, and plants. Follow directions and read all precautions on the label. Consult your local certified arborists, county agriculture agent, or state extension agent about restrictions and registered uses of particular pesticides.*

Proper Wood Storage and Disposal: Wood from trees that were attacked needs to be properly disposed of or stored break the life cycle of the insects and reduce the risk of nearby trees being

attacked. Appropriate use or disposal methods include burning, chipping, or burying (>8" deep). Firewood is an appropriate use if the wood is stacked and draped and sealed with thick clear plastic that is buried in the ground 6 inches around the perimeter using soil. This will trap the insects when they emerge the next summer and kill them by baking them under the plastic. Debarking and/or splitting the wood will also decrease re-invasion and help dry wood.

Photo 4. Properly stored beetle/borer infested wood underneath plastic that is sealed to the ground. Submitted by Gail Durham

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